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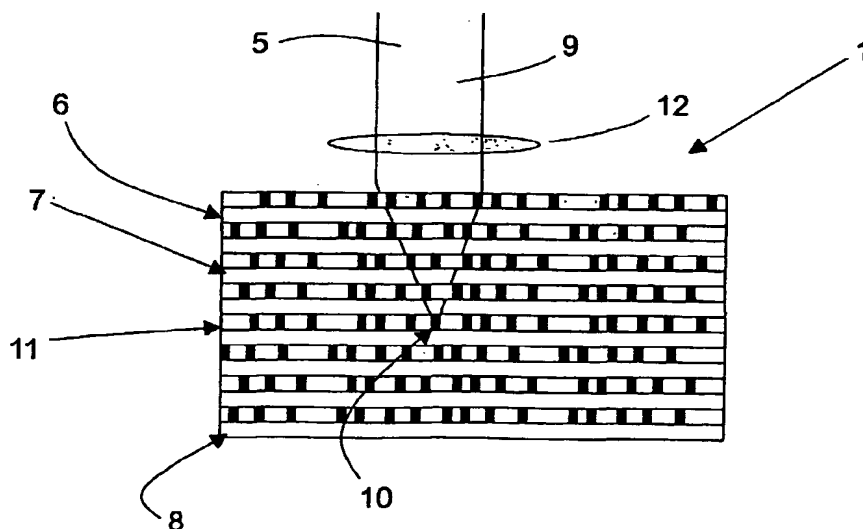
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[Continued on next page]

(54) Title: OPTICAL INFORMATION CARRIER CONTAINING BRAGG REFLECTORS



(57) Abstract: The invention refers to an optical information carrier (1) for carrying information to be read out by means of an optical beam (9) having at least one information layer (6). It is an object of the invention to provide information carriers (1) with improved collection efficiency. To achieve this object the at least one information layer (1) contains Bragg reflectors for reflecting light of the optical beam (9), when said Bragg reflector is heated above a reflectance threshold temperature by said optical beam.

**Declaration under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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**A. CLASSIFICATION OF SUBJECT MATTER**  
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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SCHLICHTING W ET AL: "Recording and readout of a cholesteric liquid crystal based multilayer disk" JAPANESE JOURNAL OF APPLIED PHYSICS, PART 1 (REGULAR PAPERS, SHORT NOTES & REVIEW PAPERS) PUBLICATION OFFICE, JAPANESE JOURNAL APPL. PHYS JAPAN, vol. 36, no. 1B, 1997, pages 587-588, XP002315760 ISSN: 0021-4922 the whole document	1-7
A	----- -/--	8,11,14, 16

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	W SCHLICHTING, S FARIS, LE LI, B FAN, J KRALIK: "Component requirements of a multi-layer, cholesteric liquid crystal based optical storage system" PROCEEDINGS OF THE SPIE, vol. 2690, 1996, pages 232-240, XP002315761	1-7
A	the whole document	8,11,14, 16
A	----- US 5 353 247 A (FARIS ET AL) 4 October 1994 (1994-10-04) the whole document	1,8,11, 14,16
A	----- WO 02/31825 A1 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD; YAMAMOTO, HIROAKI; KADOWAKI,) 18 April 2002 (2002-04-18) the whole document	8,11,14, 16
P,A	-& EP 1 327 977 A1 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD) 16 July 2003 (2003-07-16) cited for language reasons	8,11,14, 16
A	----- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22, 9 March 2001 (2001-03-09) -& JP 2001 134981 A (SANYO ELECTRIC CO LTD), 18 May 2001 (2001-05-18) abstract	8,14
A	----- US 2002/168588 A1 (TAKAMORI NOBUYUKI ET AL) 14 November 2002 (2002-11-14) the whole document	8,14
A	----- GB 2 323 205 A (* SHARP KABUSHIKI KAISHA) 16 September 1998 (1998-09-16) abstract	1,14
A	----- US 6 009 065 A (GLUSHKO ET AL) 28 December 1999 (1999-12-28) cited in the application	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB2004/050975

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5353247	A	04-10-1994	NONE	
WO 0231825	A1	18-04-2002	AU 9237001 A CN 1468431 T EP 1327977 A1 US 2003174629 A1	22-04-2002 14-01-2004 16-07-2003 18-09-2003
EP 1327977	A1	16-07-2003	AU 9237001 A CN 1468431 T WO 0231825 A1 US 2003174629 A1	22-04-2002 14-01-2004 18-04-2002 18-09-2003
JP 2001134981	A	18-05-2001	NONE	
US 2002168588	A1	14-11-2002	JP 2002342980 A	29-11-2002
GB 2323205	A	16-09-1998	NONE	
US 6009065	A	28-12-1999	AU 5516598 A EP 0943141 A1 JP 2001505701 T WO 9825262 A1	29-06-1998 22-09-1999 24-04-2001 11-06-1998